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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,369	01/18/2002	Yasushi Hasegawa	350292001200	8088

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EXAMINER

LAVILLA, MICHAEL E

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/031,369	<b>Applicant(s)</b> HASEGAWA ET AL.	
	<b>Examiner</b> Michael La Villa	<b>Art Unit</b> 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,9 and 11-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,9 and 11-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:
2. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
3. Claims 1, 9, 12-14, and 16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for amorphous iron based bonding alloys that comprise 1 to 10 atomic percent of vanadium, does not reasonably provide enablement for bonding alloys that are not iron based and comprising 1 to 10 atomic percent of vanadium. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. Inventor Hasegawa's declaration of 22 June 2004 explains that the amorphous bonding alloy must be iron based and comprise from 1 to 10 atomic percent of vanadium in order to make precision machine parts having a plurality of conveyance passages by a transient liquid diffusion bonding process.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
5. A person shall be entitled to a patent unless –

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6. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
7. (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
8. Claims 1, 12, 13, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimizu et al. USP 6,592,154 of the Office Action mailed on 1 March 2004. Any pipe may be considered to comprise multiple passages, coextensive with the entire pipe length or successive sections along the entire length.
9. Claims 1, 9, 10, 12-14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasegawa et al. JP 11-285860. Hasegawa et al. teaches joining steel pipe pieces with transient liquid phase alloy, containing the claimed amounts of V and other elements, wherein the alloy is amorphous nickel based. See Hasegawa et al. (Abstract; Figures 1 and 2; paragraphs 6-9, 13, 17-19; and Table 1). Any pipe may be considered to comprise multiple passages, coextensive with the entire pipe length or successive sections along the entire length. While the pipe may not have actually been precision machined, it would be indistinguishable from a pipe that had been precision machined.
10. Claims 1 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuda et al. JP 2-121782. Fukuda teaches a precision machine part having a plurality conveyance passages formed by joining two pieces together by liquid phase diffusion bonding of a nickel based bonding alloy. See Fukuda (Figures 1

and 2 and corresponding discussion). Fukuda does not teach using a ribbon of amorphous alloy, but it would be expected that the resulting articles of Fukuda would be encompassed by the claimed articles since the claimed articles are also formed by liquid phase diffusion bonding and by nickel-based bonding alloy.

11. Claims 1 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kishi et al. EP 769344. Kishi teaches joining steel pipe pieces with a liquid phase diffusion process using an iron-based or nickel-based amorphous alloy. See Kishi (Abstract; page 7, line 55 through page 8, line 16; Figures 3, 6, and 8). Any pipe may be considered to comprise multiple passages, coextensive with the entire pipe length or successive sections along the entire length. While the pipe may not have actually been precision machined, it would be indistinguishable from a pipe that had been precision machined.

12. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al. JP 9-220658. Yamamoto teaches a manifold having multiple conveyance passages, wherein the manifold is formed by liquid diffusion bonding with an amorphous alloy. See Yamamoto (paragraphs 21-27 of the translation; and Figures 7-10). While the manifold may not have actually been precision machined, it would be indistinguishable from a manifold that had been precision machined.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

15. Determining the scope and contents of the prior art.
16. Ascertaining the differences between the prior art and the claims at issue.
17. Resolving the level of ordinary skill in the pertinent art.
18. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 1, 9, 10, 11, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. USP 5,919,577. Hasegawa teaches joining steel pipe pieces with transient liquid phase alloy, containing the claimed amounts of V, B, P, and other elements, wherein the alloy is amorphous and iron based. With respect to Claim 11, the claimed compositional "contains" language allows for the presence of additional elements, notwithstanding the closing language of "balance being Fe and unavoidable impurities." See Hasegawa et al. (Abstract; Figure 1; Examples 1 and 2 and disclosed alloys therein; col. 21, lines 20-31; and col. 31, lines 20-30). Hasegawa does not exemplify bonding pipe pieces, but does teach that the disclosed alloys are effective for this

purpose. It would have been obvious to one of ordinary skill in the art at the time of the invention to assemble pipe pieces with the transient liquid phase alloy disclosed by Hasegawa as Hasegawa teaches that these alloys are effective for the bonding of pipe pieces. Any pipe may be considered to comprise multiple passages, coextensive with the entire pipe length or successive sections along the entire length. While the pipe may not have actually been precision machined, it would be indistinguishable from a pipe that had been precision machined. With respect to Claim 17, Hasegawa does not specifically address the amount of deformation in the bonding process. However, the materials used in Hasegawa are similar to those used by applicant. In the event that the deformation of Hasegawa does not meet the claimed limitation, it would be expected that the articles of Hasegawa may nevertheless be encompassed by the claimed process by using material thickness, joining temperature, and bonding stress loading different from that of Hasegawa that obtain the plastic deformation, as claimed, and that obtain articles that are compositionally and structurally indistinguishable from those of Hasegawa.

### ***Response to Amendment***

- I. In view of applicant's amendments and arguments, applicant traverses the section 112, second paragraph rejections of the Office Action mailed on 1 March 2004. Rejections are withdrawn.

- II. In view of applicant's amendments and arguments, applicant traverses the section 112, first paragraph rejections of the Office Action mailed on 1 March 2004. Applicant's citations of portions of the Specification provide antecedent support for the invention as now claimed, and so the rejection is withdrawn.
- III. The objection to the Specification of the Office Action mailed on 1 March 2004 is withdrawn.
- IV. The claim objection of the Office Action mailed on 1 March 2004 is withdrawn.
- V. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Shimizu of the Office Action mailed on 1 March 2004. Applicant argues that Shimizu only teaches a single conveyance passage, and not multiple passages as claimed. Any pipe may be considered to comprise multiple passages, coextensive with the entire pipe length or successive sections along the entire length. Applicant argues that Shimizu does not teach an amorphous nickel based alloy. That the claimed ribbon starting material is amorphous would not appear to necessarily require that the resulting claimed articles cannot encompass articles taught by Shimizu that are arguably obtained from ribbon that is not amorphous. The liquid diffusion process may result in final bonding material that is indistinguishable, notwithstanding differences in the starting material. Applicant provides



a declaration by Inventor Hasegawa that points out distinguishing features of applicant's invention and the disclosure of Shimizu, such as defects at non-zero fusion face angles in Shimizu that are absent in applicant's articles. However, such face angles are not claimed limitations, rendering the distinction unpersuasive as a grounds for patentability.

- VI. Applicant has filed a declaration by Inventor Hasegawa on 22 June 2004. Inventor Hasegawa has characterized applicant's invention and the disclosure of Shimizu. Inventor Hasegawa explains that Shimizu pertains to metal pipe having only one conveyance passage. Inventor Hasegawa explains that experiments demonstrate that deformation defects arise due to a non-zero fusion face angle in the pipes of Shimizu. At page 2 and at page 8, Inventor Hasegawa explains that precision machine part having a plurality of conveyance passages that are to be joined by a transient liquid phase diffusion bonding process must be joined with an amorphous bonding iron based alloy comprising from 1 to 10 atomic percent of vanadium.

### ***Conclusion***

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is (571) 272-1539. The examiner can normally be reached on Tuesday, Thursday, and alternating Fridays.

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21. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael La Villa  
7 September 2004

